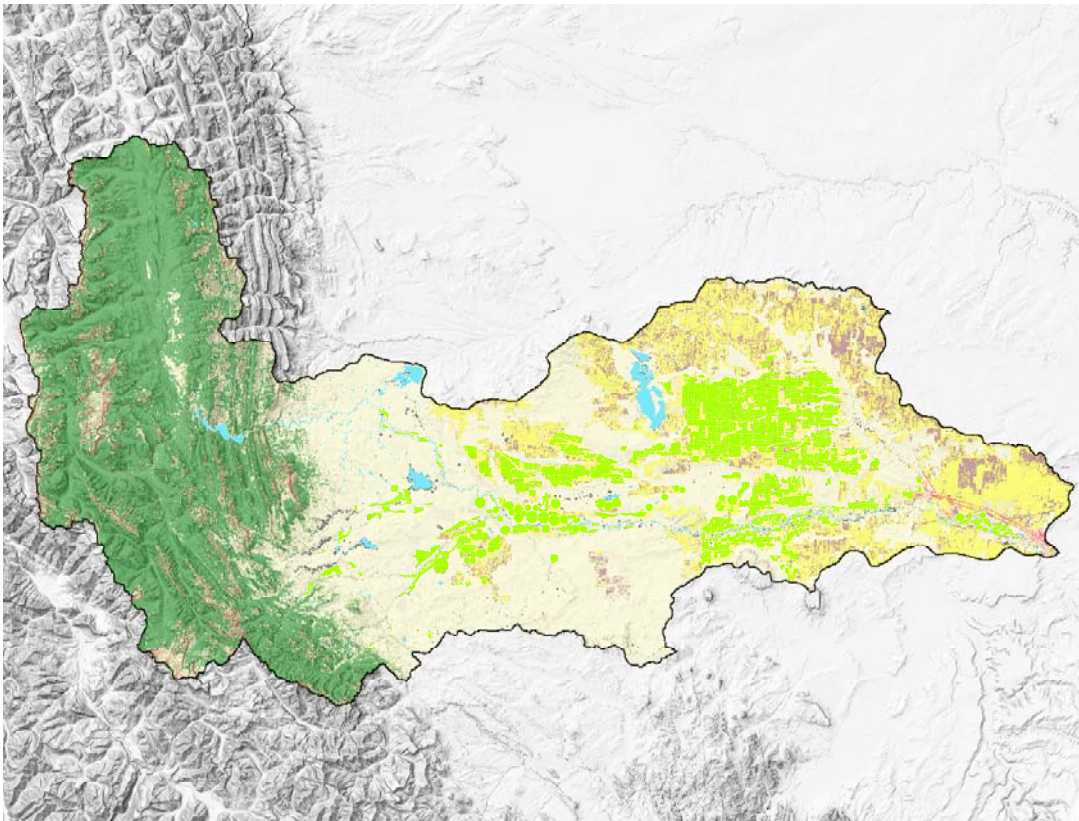


WATER QUALITY RESTORATION PLAN AND TOTAL MAXIMUM DAILY LOADS FOR THE SUN RIVER PLANNING AREA



DECEMBER, 2004



DOCUMENT SUMMARY

The Sun River watershed spans a number of land types: from the forested headwaters in the Rocky Mountain wilderness, to the mouth in the plains near the City of Great Falls, Montana. Agricultural land use predominates the majority of the watershed. The links between water quality, land use, and the natural variability of land types in the watershed are complex. This document attempts to use existing information to link water quality conditions to natural and human influences in the watershed.

The potentially impaired waters identified by the State of Montana 303(d) lists, found in the Sun River watershed are: Ford Creek, Gibson Reservoir, Willow Creek Reservoir, upper Sun River, lower Sun River, Freezeout Lake, and Muddy Creek. This document addresses all of the 1996 or 2002 303(d) listed waterbody-pollutant combinations by either providing a TMDL, providing justification that the waterbody is not impaired due to a pollutant, or providing a strategy to complete a TMDL if current information is not adequate for TMDL formation (Table E-1, Map 1-1). The general pollutant categories addressed in this document are sediment, temperature, selenium, nutrients, salts, and pH. Pollution listings are usually addressed by considering them as sources of a pollutant.

A cursory review of each TMDL component is not feasible for inclusion in this portion of the document because it alone would fill too many pages. The document is structured in a format that will allow you to read about an individual waterbody quite easily. The document is structured in a way that Sections 1.0-4.0 provides background information about the Sun River watershed, Montana's water quality standards, and Montana's 303(d) listings. Sections 5.0-10.0 relate to a specific pollutant, and within each section each potentially impaired waterbody is addressed.

Table E-1. Current Water Quality Impairment Status of Waters in the Sun River.

Waterbody	Listed Probable Causes (pollutants)	303(d) List Status		Current Status	Action
		1996	2002		
Ford Creek	Siltation Nutrients	Impaired	Impaired	Impaired	<ul style="list-style-type: none"> Justification provided for no need of nutrient TMDL. Addressed by a TMDL for Sediment.
Gibson Reservoir	Siltation Suspended Solids	Impaired	Not Listed due to Lacking Data	Not impaired due to Sediment or TSS.	<ul style="list-style-type: none"> Conduct a 303(d) review
Willow Creek Reservoir	Only listed for pollution	Impaired	Not Listed due to Lacking Data	Potentially impaired	<ul style="list-style-type: none"> Conduct a 303(d) review

Table E-1. Current Water Quality Impairment Status of Waters in the Sun River.

Waterbody	Listed Probable Causes (pollutants)	303(d) List Status		Current Status	Action
		1996	2002		
Upper Sun River	Siltation Suspended solids Nutrients Phosphorus Thermal modification	Impaired	Impaired	Impaired	<ul style="list-style-type: none"> Justification provided for no need of nutrient or phosphorus TMDL. All other pollutants are addressed by TMDLs.
Freezeout Lake	Nutrients Organic Enrichment/DO Sulfates Salinity/TDS/Chlorides Metals Selenium	Impaired	Impaired	Impaired	<ul style="list-style-type: none"> Not enough information to determine if nutrient/Organic Enrichment/DO TMDL is needed. A plan is provided to gather information. All other pollutants are addressed by TMDLs. Investigate for potential reclassification.
Muddy Creek	Suspended Solids Nutrients Thermal modification Salinity/TDS/Sulfates pH	Impaired	Impaired	Impaired	<ul style="list-style-type: none"> Justification provided for no need of pH TMDL. All other pollutants are addressed by TMDLs. Investigate for potential reclassification.
Lower Sun River	Siltation Suspended solids Nutrients Thermal modification Salinity/TDS/Sulfates	Impaired	Impaired	Impaired	<ul style="list-style-type: none"> Justification provided for no need of temperature or salinity TMDLs. All other pollutants are addressed by TMDLs. Investigate for potential reclassification.

ACRONYMS AND ABBREVIATIONS

ARM	Administrative Rules of Montana
BMP	Best Management Practice
BUD	Beneficial Use Determination
BLM	Bureau of Land Management, United States
CFR	Clark Fork River
cfs	Cubic Feet Per Second
CRP	Conservation Reserve Program
CWA	Clean Water Act
DNRC	Department of Natural Resources and Conservation, Montana
EC	Electrical Conductance
EMAP	Environmental Monitoring and Assessment Program
EPA	Environmental Protection Agency, United States
EQIP	Environmental Quality Initiatives Program
F	Fahrenheit
FSID	Fort Shaw Irrigation District
GID	Greenfields Irrigation District
GIS	Geographic Information System
GPS	Global Positioning System
HUC	Hydrologic Unit (Code) from USGS
IWM	Irrigation Water Management
Lat.	Latitude
lbs/yr	pounds per year
Long.	Longitude
MBMG	Montana Bureau of Mines & Geology
MDEQ	Montana Department of Environmental Quality
MCA	Montana Code Annotated
MFWP	Montana Fish, Wildlife and Parks
µg/L	Micrograms per liter
µS/cm	Microsiemens per centimeter
mg/l	Milligrams per liter
MPDES	Montana Pollutant Discharge Elimination System
n	number of samples
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint source pollution
MSU	Montana State University
NRCS	Natural Resource Conservation Service
PFC	Proper Functioning Condition (Riparian)
QA/QC	Quality Assurance and Quality Control
SAR	Sodium Adsorption Ratio
SCD	Sufficient Credible Data
SC	Specific Conductance
SRF	State Revolving Fund
SRWG	Sun River Watershed Group
SSC	Suspended Sediment Concentration
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus

TSS	Total Suspended Solids
USBR	United States Bureau of Reclamation
USFWS	United States Fish and Wildlife Service
USFS	United States Forest Service
USGS	United States Geological Survey
W/D Ratio	Width to Depth Ratio
WMA	Wildlife Management Area
WQB-7	Circular WQB-7, Montana Water Quality Standards
WQRP	Water Quality Restoration Plan

Table of Contents

[Section 1.0 Introduction](#)

[Section 2.0 General Watershed Characteristics](#)

[Section 3.0 Water Quality Standards and 303\(d\) Listing](#)

[Section 4.0 In Stream Flow/Discharge Conditions](#)

[Section 5.0 Hydrogen Ion Content \(pH\)](#)

[Section 6.0 Salinity](#)

[Section 7.0 Selenium](#)

[Section 8.0 Nutrients](#)

[Section 9.0 Sediment](#)

[Section 10.0 Temperature](#)

[Section 11.0 Roadmap for Ongoing and Future Restoration Activities](#)

[Section 12.0 Public Involvement](#)

[List of Appendices](#)

[List of Maps](#)